

## ABSTRACT

A method of automatically correcting dust artifact within images acquired by a system including a digital camera includes determining probabilities of dust artifact regions corresponding to pixels within a digitally-acquired image based at least in part on a pixel analysis of the region in view of predetermined characteristics indicative of the presence of a dust artifact region. The dust artifact regions are associated with one or more extracted parameters relating to the optical system when the image was acquired. A statistical dust map is formed including mapped dust regions based on the dust artifact determining and associating operations. Digital data is corrected corresponding to correlated dust artifact regions within the acquired image based on the associated statistical dust map.